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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/732,910

12/09/2003

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53433/2

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06/22/2007

EXAMINER

WYSZOMIERSKI, GEORGE P

ART UNIT

PAPER NUMBER

1742

MAIL DATE

DELIVERY MODE

06/22/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/732,910	<b>Applicant(s)</b> XIA ET AL.	
	<b>Examiner</b> George P. Wyszomierski	<b>Art Unit</b> 1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 5/29/07 (Election).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 and 15-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4-9 and 11-14 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/21/04</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. Applicant's election without traverse of Group II, claims 4-14 in the reply filed on May 29, 2007 is acknowledged.

2. ***Claim Interpretation***-- Claim 4 recites a desired shape "such as" several recited shapes. It is noted that this phrasing does not limit the claimed process to manufacturing of those recited shapes.

3. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The meaning of this claim is uncertain. Is Applicant stating that one must take two solutions (one with the silver nitrate and the other with the PVP) and combine them simultaneously with an additional volume of ethylene glycol, or is some other meaning intended?

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by the Carotenuto et al. European Physical Journal article.

The last several lines on page 12 of Carotenuto, as well as Figure 3 and its description on page 14 of that reference, appear to disclose a process completely in accord with that

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presently claimed. The "desired shape" recited in the instant claims would, in the prior art reference, be a particle shape.

6. Claims 4-7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by any of the Sun et al. January 3, 2002 Nano Letters article, the Sun et al. June 5, 2002 Advanced Materials article, or the Sun et al. Chem. Mater. article.

Each of the Sun articles discloses making silver nanowires by mixing appropriate amounts of solutions of silver nitrate and poly vinyl pyrrolidone in ethylene glycol and reacting to allow nanowires to form. The products made by this process are in the form of twinned bicrystals. With respect to claim 6, each of the Sun articles discloses analyzing the structure of the nanowires, which by its nature would require separating the wires from other shapes. Thus, all aspects of the claimed invention are held to be fully disclosed by the Sun et al. articles.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Sun et al. June 5, 2002 Advanced Materials article, or the Sun et al. Chem. Mater. article.

These two Sun et al. publications disclose mixing silver nitrate and PVP solutions in ethylene glycol, with the concentration of silver nitrate and the ratio of PVP to silver nitrate being in the range recited in instant claim 12. The molecular weight of the PVP in the prior art is

55,000. The mixtures are reacted at 160.deg.C for 60 minutes in the June 5 article, and for a variety of time periods in the Chem. Mater. article.

The prior art does not teach the forming of nanocubes, as required by the instant claims. However, the prior art processes appear to be substantially identical to those as claimed, i.e. performed using identical materials under identical conditions. What appears to occur in the prior art (see Figures 2 and 3 of the June 5 article or Figure 2B of the Chem. Mater. article) is that some cubic shaped materials form in this process, and some of these materials may then grow into wires or other shapes that are not nanocubes. However, it would appear that nanocubes would be formed in the prior art, at least initially. Thus, no patentable distinction is seen between the process as claimed and that as disclosed in the Sun et al. June 5, 2002 article or Chem. Mater. article.

9. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or suggest the formation of nanopyramids.


10. The remainder of the art cited on the attached PTO-892 and 1449 forms is of interest. This art is held to be no more relevant to the claimed invention than the art as applied in the rejections, supra.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. All patent application related correspondence transmitted by facsimile must be directed to the central facsimile number, (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER  
GROUP 1700

GPW  
June 20, 2007